

Construction

HOUSATONIC RIVER FLOOD CONTROL

HANCOCK BROOK

DAM & RESERVOIR

HANCOCK BROOK, CONNECTICUT

DESIGN MEMORANDUM NO. 6

EMBANKMENTS & FOUNDATIONS



U.S. Army Engineer Division, New England
Corps of Engineers Waltham, Mass.

AUGUST 1962

30

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

LESS REPLY TO:
DIVISION ENGINEER
REFER TO FILE NO.

21 December 1962

NEDCW

SUBJECT: Design Memorandum 9A, Preliminary Master Plan for
Reservoir Development - Part of the Master Plan for
Hancock Brook Reservoir, Naugatuck River Watershed,
Housatonic River Basin, Connecticut

TO: Chief of Engineers
ATTN: ENGCW-O
Department of the Army
Washington, D. C.

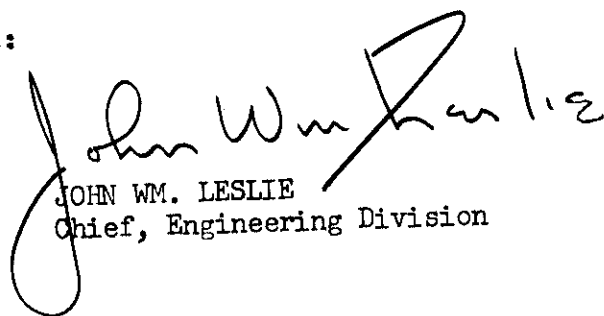
1. Submitted for review and approval are five (5) copies
of subject memorandum, together with a copy of this letter bound
in each copy of the memorandum, in accordance with EM-1110-2-1150.

2. The plan has been initiated to provide for maximum
utilization of the reservoir by the public consistent with the
resources of the area and the authorized purposes of the project.

3. Approval is requested.

FOR THE DIVISION ENGINEER:

Incl (quint)
Des Memo No. 9A
Hancock Brook Reservoir


JOHN WM. LESLIE
Chief, Engineering Division

BIBLIOGRAPHY OF DESIGN MEMORANDUMS

HANCOCK BROOK RESERVOIR

<u>Design Memo No.</u>	<u>Title</u>	<u>Submission Date</u>	<u>Approved</u>
1	Hydrology & Hydraulics Analysis	27 Dec. 1961	29 Jan. 1962
2	Site Geology	21 Feb. 1962	22 Mar. 1962
3	General Design	27 Mar. 1962	3 May 1962
4	Relocations	18 Apr. 1962	4 June 1962
5	Concrete Materials	20 Nov. 1961	7 Dec. 1961
6	Embankment and Foundations	10 Aug. 1962	12 Sept 1962
7	Real Estate	2 July 1962	16 Aug. 1962
8	Detailed Design of Structures	27 July 1962	31 Aug. 1962
9A	Reservoir Development (Preliminary)	21 Dec. 1962	
9B	Reservoir Development (Master Plan)	Dec. 1963	

HOUSATONIC RIVER BASIN, CONNECTICUT

NAUGATUCK RIVER WATERSHED

DESIGN MEMORANDUM NO. 9A

PRELIMINARY MASTER PLAN

FOR

RESERVOIR DEVELOPMENT

PART OF THE MASTER PLAN

FOR

HANCOCK BROOK RESERVOIR, CONNECTICUT

This report, prepared in the Planning and Reports Branch of the Engineering Division, New England Division, has been coordinated with the Real Estate Division and is recommended for approval.


JOSEPH M. GEOGHEGAN
Chief, Real Estate Division

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HANCOCK BROOK RESERVOIR, CONNECTICUT

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I. INTRODUCTION

1-01. Authorization. The flood protection plan for the Housatonic River Basin, including the Hancock Brook Dam and Reservoir, was approved by the Flood Control Act dated 14 July 1960 (Public Law 86-645, 86th Congress).

An interim report dated 30 June 1958, and printed as House Document No. 372, 86th Congress, 2nd Session, recommended that the authorized plan for flood control in the Housatonic River Basin be modified to provide for construction of flood control dams and reservoirs on Northfield Brook, Branch Brook, Hancock Brook and Hop Brook.

Authorization for development and use of the reservoir area for public recreational and other purposes is contained in Section 4 of the Flood Control Act approved 22 December 1944 (Public Law 534, 78th Congress, 2nd Session), as amended by the Flood Control Act approved 24 July 1946 (Public Law 526, 79th Congress, 2nd Session) as further amended by the Flood Control Act approved 3 September 1954 (Public Law 780, 83rd Congress, 2nd Session), and as further amended by the Flood Control Act approved 23 October 1962 (Public Law 874, 87th Congress, 2nd Session).

This preliminary plan for reservoir development and management has been prepared in accordance with EM 1130-2-302, Planning and Administration of Project Lands and Waters, and related manuals.

1-02. Scope of Report. This report presents a preliminary plan to serve as a guide for a subsequent program for the development, management, and use of the Hancock Brook Reservoir for public purposes which are not incompatible with the authorized project purposes. It presents a description of the project, factors affecting recreational activities, and views of other agencies.

1-03. Maps. The maps incorporated in the report depict the geographic area in which the project is located, public recreation areas in the vicinity of the project, reservoir features, and a proposed development plan.

II. DESCRIPTION OF AUTHORIZED PROJECT

2-01. Purpose. The reservoir will be used primarily for flood control purposes. To mitigate fish and wildlife losses occurring from project construction and operation, a small wildlife management pool will be maintained periodically at elevation 460 feet m.s.l.

2-02. Location. The Hancock Brook Dam and Reservoir project will be located on the Hancock Brook tributary of the Naugatuck River, entirely within the Town of Plymouth in west central Connecticut on the easterly side of the Naugatuck River Basin. The dams site will be located about 3.2 miles upstream of the confluence of Hancock Brook and the Naugatuck River and about 4.5 miles north of the Town of Waterbury. The location of the project is shown on Plate 1.

2-03. Accessibility. The project area is readily accessible over an excellent highway system to the 2,400,000 people who reside within an hour's drive (40 miles) of the project. U. S. Route 202, a major north-south road, and Route 8 bypass the project area. Access to the reservoir area from Route 8 will be via Waterbury Road which will be relocated to bypass the easterly side of the dam.

2-04. Project Status. Bids will be received and construction initiated during the 4th quarter of FY 1963, with completion scheduled for the second quarter of FY 1965.

2-05. Pertinent Data. At spillway crest elevation 484, the reservoir will cover 266 acres and provide 4,030 acre-feet of flood control storage, equivalent to 6.33 inches of runoff from the tributary drainage area of 12.0 square miles. The dam with top elevation of 505 feet m.s.l., will be 57 feet high, 630 feet long, and consist of earth with rock slope protection. The spillway consisting of a simple concrete sill founded on rock, 100 feet long, will be located in the right abutment. An ungated rectangular concrete conduit 3 feet wide and 4.5 feet high with a length of 247 feet will be founded on bed rock at the base of the dam structure. The intake structure will be founded on rock and consist of a reinforced concrete control weir with crest at elevation 458.0 m.s.l. Stop logs will be provided to raise the pool level to elevation 460.0 m.s.l. for vegetation control or wildlife management. A 2'-0" x 2'-0" sluice gate will be provided to permit dewatering of the pool. The five-year flood pool at elevation 475 feet will have a surface area of 200 acres. The surcharge elevation will be ten feet above the spillway.

2-06. Land Acquisition. Land for this project will be acquired in accordance with the policy outlined in EM 405-2-150, as amended, including change 9, dated 9 March 1962. Fee title will be acquired for all lands needed for project operation, including areas for construction, permanent structures, borrow, highway and railroad relocations, and the reservoir. The guide taking line for fee acquisition has been set at 490' m.s.l. which provides six feet of clearance above spillway crest and includes 298 acres. Because of denial of access to

a major portion of the lands affected by the project, and lands required for damsites, work and borrow, road and railroad relocations, and the 300 foot horizontal strip of land required by the new policy, it is estimated that about 895 acres will be acquired in fee. On this basis, the project fee area is adequate for access and use of the reservoir resources by the public without additional lands for this purpose. The Real Estate Map will be included in the Master Plan.

III. FACTORS AFFECTING RECREATIONAL ACTIVITIES

3-01. Existing Public Recreation Areas. The three states within an hour's drive (40 miles) of the project provide parks, forests and other recreation areas for the public. The development of these vary considerably. The addition of Hancock Brook Reservoir and several other reservoirs to be constructed in the Naugatuck River Basin, as well as the completed Thomaston Dam, will significantly supplement these recreation areas. Plate No. 2 shows the location of existing public recreation areas and available uses.

3-02. Population. The number of persons residing within 40 miles of the project has been recorded at over 2.4 million by the 1960 United States Census, with a population of 1.3 million within a radius of 25 miles. This represents a population growth of about 26 per cent over the 1950 census.

3-03. Anticipated Public Use. Based upon the increasing number of hunters and fishermen utilizing the streams and forest areas in Connecticut, it is estimated that the project area will receive maximum use of this type within two years after project completion. It is estimated that the project will attract about 20,000 annual visitors, the majority of which will be hunters and fishermen.

3-04. Project Resources. The Hancock Brook Reservoir will be a single-purpose flood control reservoir and, in accomplishment of its objective, may impound flood waters to a maximum depth of 50 feet at the dam. Although it is recognized that a flood may occur at any time of the year in the precipitous river basins of New England, the major use of the reservoir will be in the spring of the year since the melting snow from the higher elevations combines with the normal rainfall to make the streams higher than during the other seasons. Experience over the past 20 years in the operation of other flood control reservoirs in New England indicates that the natural resources of the reservoirs are available for uninterrupted use during most of the summer, fall, and winter seasons. Experience has further

shown that important benefits accruing from public recreational development and use, fish and game and forestry management, and other uses have proved quite compatible with the authorized flood control purpose of these reservoirs. It is therefore concluded that the project is suitable for the development and use as proposed in this Preliminary Master Plan. The U.S. Fish and Wildlife Service and the Connecticut Board of Fisheries and Game recommend that the best use of the project area will be as a fish and wildlife management area. The area is ideally suited for development as a small game hunting area under an intensive management plan. The permanent pool at elevation 460' m.s.l., with a surface area of 40 acres and an average depth of only 3 feet, will be held periodically for management purposes.

IV. COOPERATING AGENCIES

4-01. Federal Agencies.

a. U. S. Department of Health, Education, and Welfare. - On 30 January 1957, the regional office furnished the New England Division its evaluation report on vector problems related to the project. The overall effect of the project upon vector production should be beneficial since it will result in a decrease of the highly annoying floodwater mosquitoes (*aedes vexans*).

b. U. S. Fish and Wildlife Service. - The Northeast Region (Region 5) of the Service furnished a conservation and development report, dated 25 April 1960, which concluded that the reservoir area has a high potential value as a fish and wildlife management area. Comprehensive consideration will be given to the report, and the recommendations contained therein, and full treatment of the subject will be included in the Master Plan.

4-02. Agencies - State of Connecticut.

a. Board of Fisheries and Game. - This agency participated in, and concurs with the report of the U. S. Fish and Wildlife Service. The Board of Fisheries and Game feel that the best use of the Hancock Brook Reservoir will be to develop it as a small-game public hunting area under an intensive management program. This plan will be geared primarily to developing the most effective pheasant management program, although benefits will accrue to other game species as well. Pheasant stocking, as a management feature, will be employed in a manner best suited to habitat conditions and hunter pressure. Modification of habitat, including that which provides

wildlife food as well as cover, will be undertaken in order to adapt the area to best fit into this intensive type management plan. Under this wildlife plan, it is anticipated that the permanent pool will be held periodically for management purposes such as control of vegetation, and so long as the downstream area of Hancock Brook maintains its value for trout. The Board of Fisheries and Game is prepared to undertake the program under suitable license agreement. This program will be developed for inclusion in the master plan.

b. Water Resources Commission. - Various meetings were held with the State Water Resources Commission, the coordinating agency for the State in State-Federal affairs, and they concur with the recommendation of the U. S. Fish and Wildlife Service and the Connecticut Board of Fisheries and Game that the most beneficial public use of the reservoir would be as a fish and wildlife management area.

V. SITES SELECTED FOR PUBLIC USE

5-01. General Reservoir Area. The entire reservoir area exclusive of the flood control structures is proposed for use as a hunting and fishing area with development by the Corps limited to provision of sanitary facilities, parking areas, and improvement and addition of access roads.

VI. COST ESTIMATE

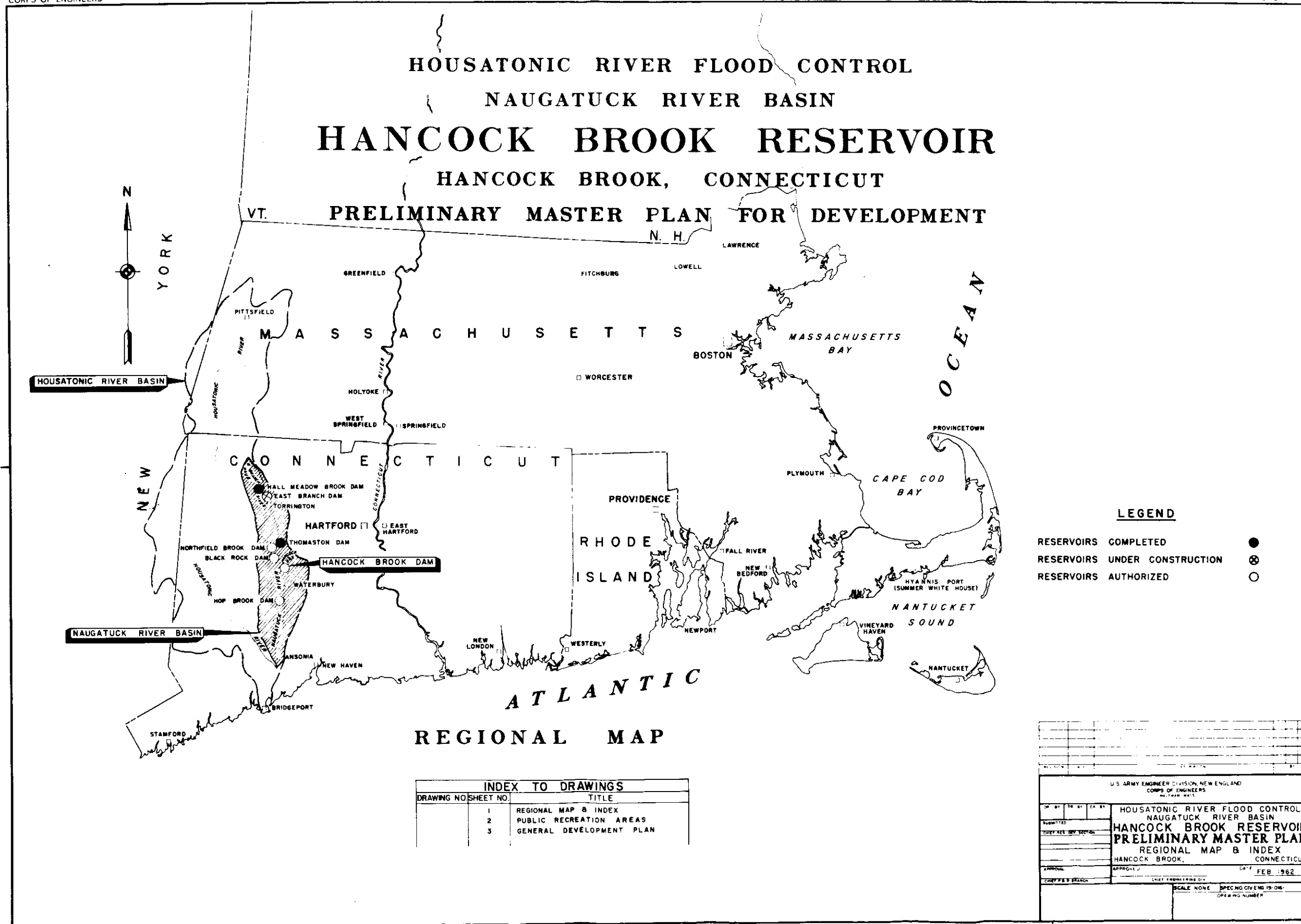
6-01. Cost Estimate. The preliminary estimate of initial cost is based on development of basic facilities by the Federal Government. These facilities will generally conform to criteria set forth in EM 1130-2-312.

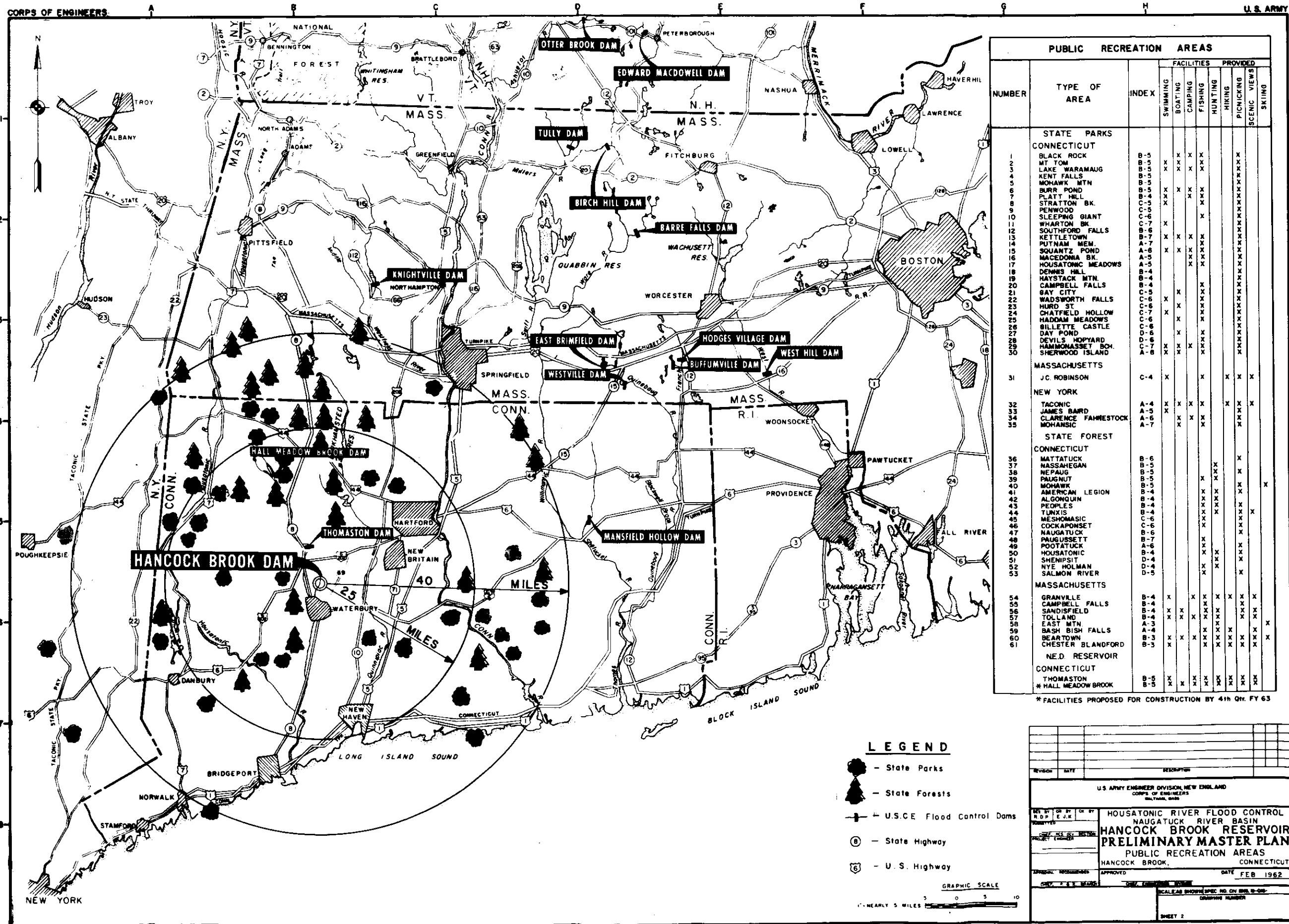
ESTIMATE OF COST (Preliminary)

<u>Item</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Cost</u>
Parking Areas (gravel)	\$ 1.20	7000 s.y.	\$ 8,400
Access Road (gravel)	3.00	1500 ft.	4,500
Pit Type Toilets	1500.00	5 ea.	<u>7,500</u>
Total Construction Cost (Incl. Contingencies)			\$ 20,300
Engineering and Design (10%)			2,030
Supervision and Administration (8%)			<u>1,630</u>
Total Cost. . . .			\$ 23,960

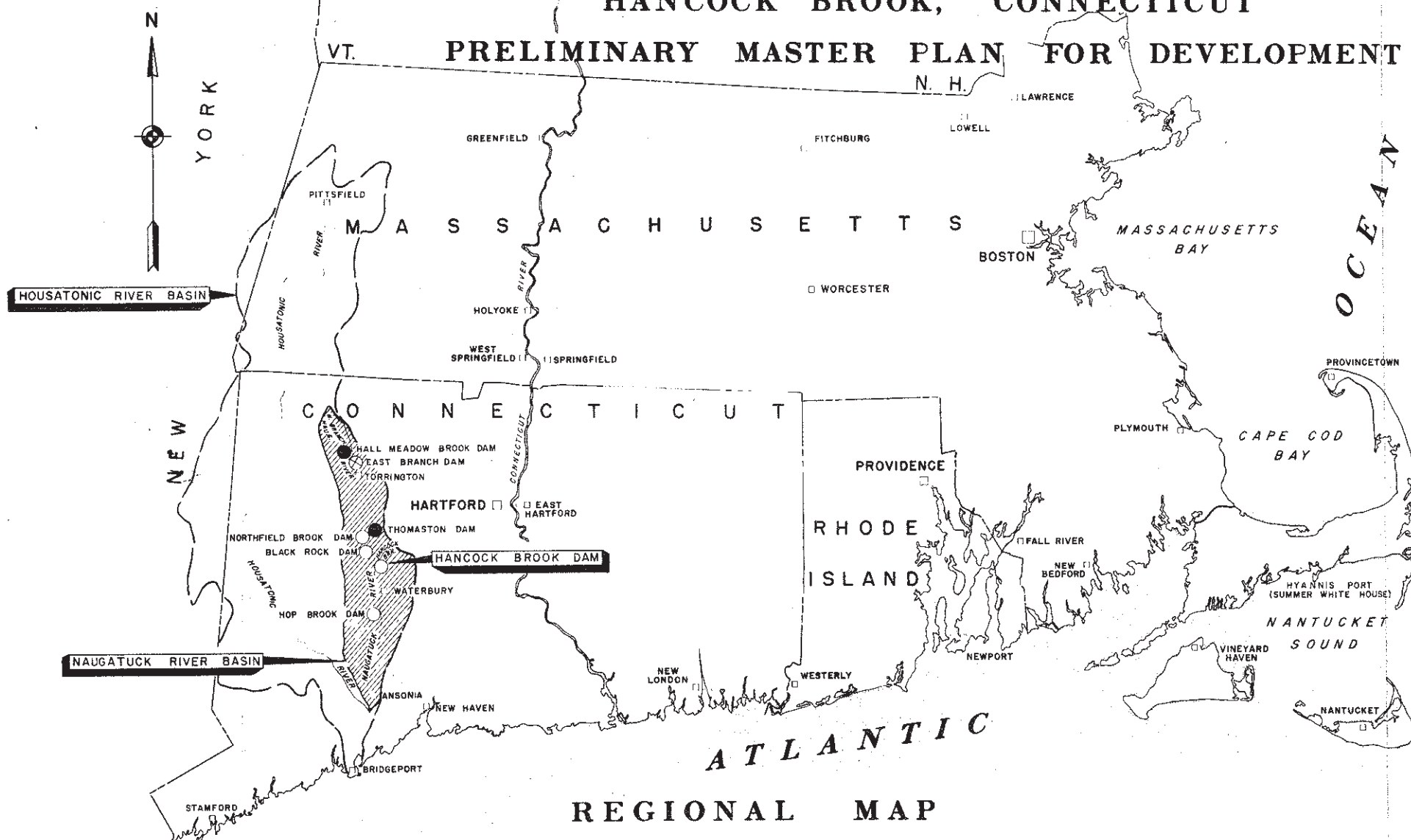
VII. CONSTRUCTION SCHEDULE

7-01. Construction Schedule. The development of public use facilities will be undertaken at such time as will be in the best interest of the Government with respect to the authorized project construction contract. It is planned to have the facilities available for public use by the summer season of 1965.





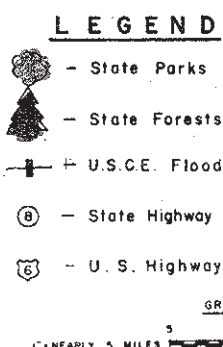
HOUSATONIC RIVER FLOOD CONTROL NAUGATUCK RIVER BASIN HANCOCK BROOK RESERVOIR HANCOCK BROOK, CONNECTICUT PRELIMINARY MASTER PLAN FOR DEVELOPMENT

**LEGEND**

- RESERVOIRS COMPLETED ●
RESERVOIRS UNDER CONSTRUCTION ⊗
RESERVOIRS AUTHORIZED ○

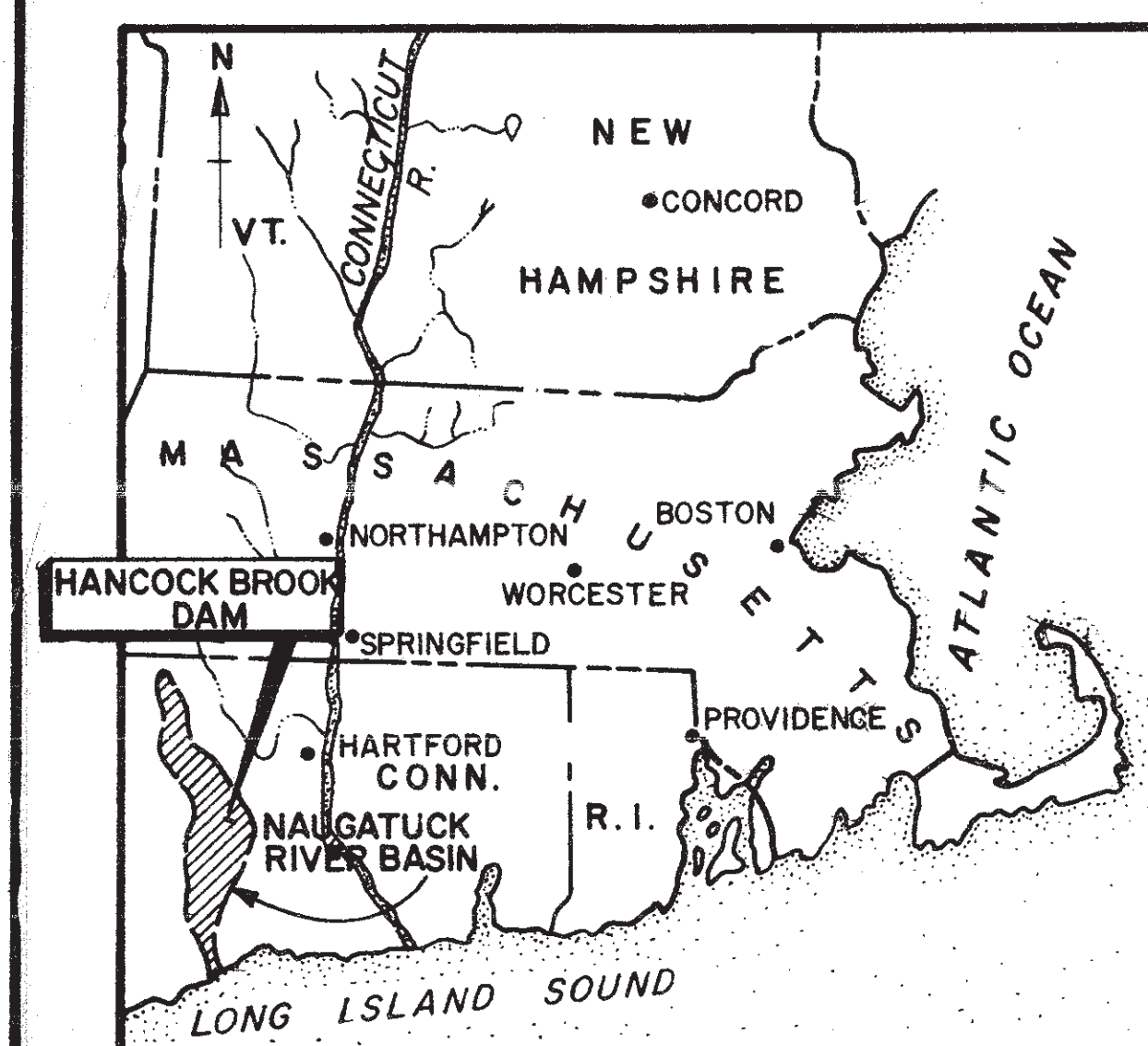
INDEX TO DRAWINGS	
DRAWING NO./SHEET NO.	TITLE
1	REGIONAL MAP & INDEX
2	PUBLIC RECREATION AREAS
3	GENERAL DEVELOPMENT PLAN

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SUBMITTED			DATE
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APPROVED			DATE
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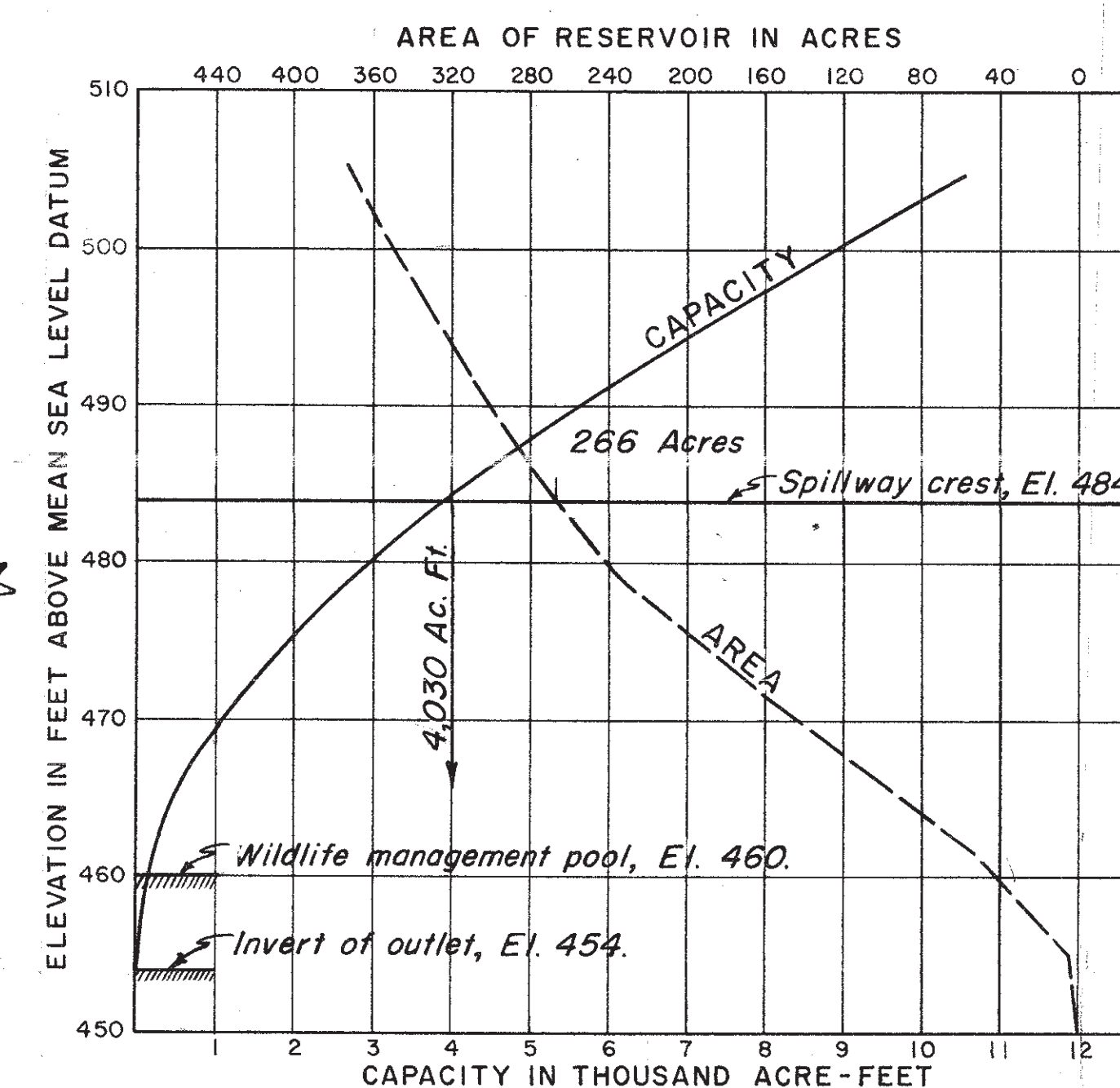


* FACILITIES PROPOSED FOR CONSTRUCTION BY 4th Qtr. FY 63

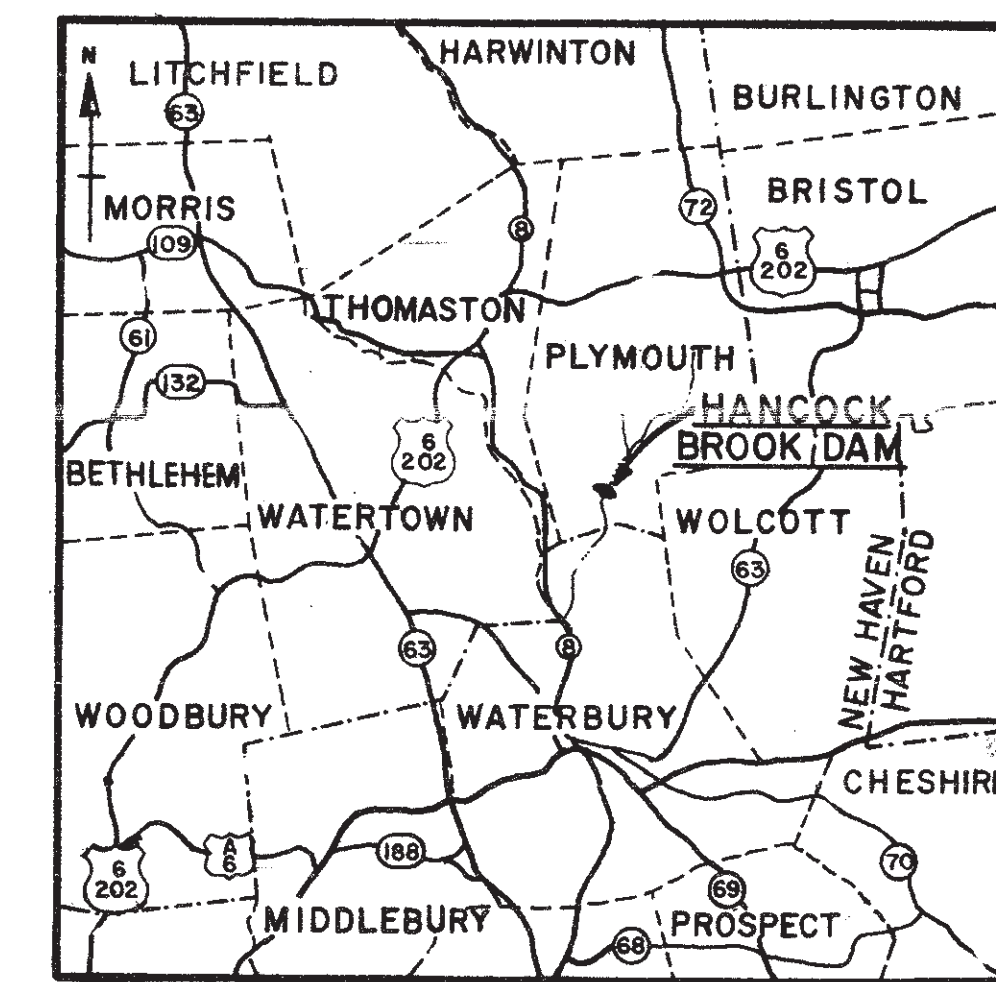
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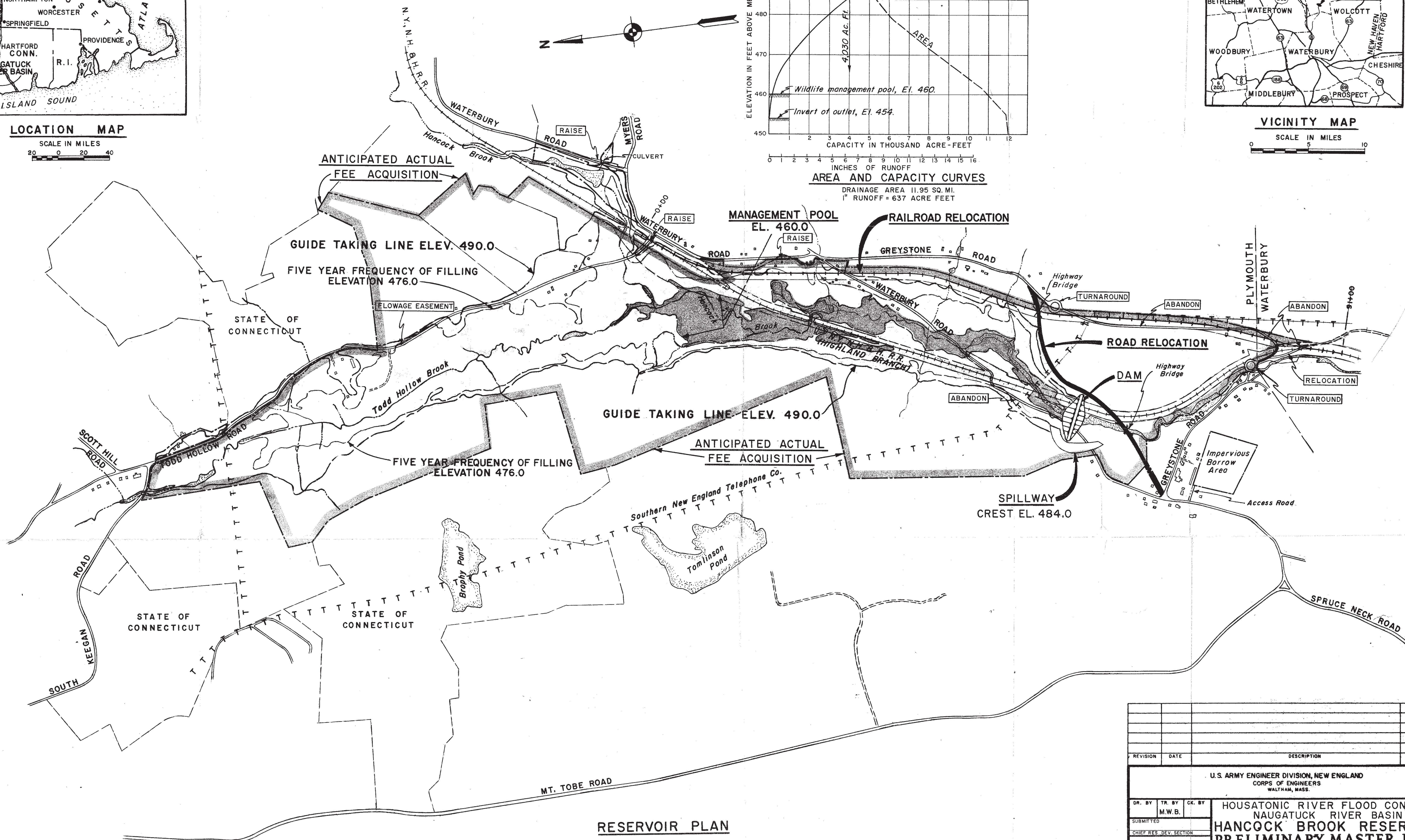
LOCATION MAP

SCALE IN MILES
0 20 40

AREA AND CAPACITY CURVES

DRAINAGE AREA 11.95 SQ. MI.
1" RUNOFF = 637 ACRE FEET

VICINITY MAP

SCALE IN MILES
0 5 10

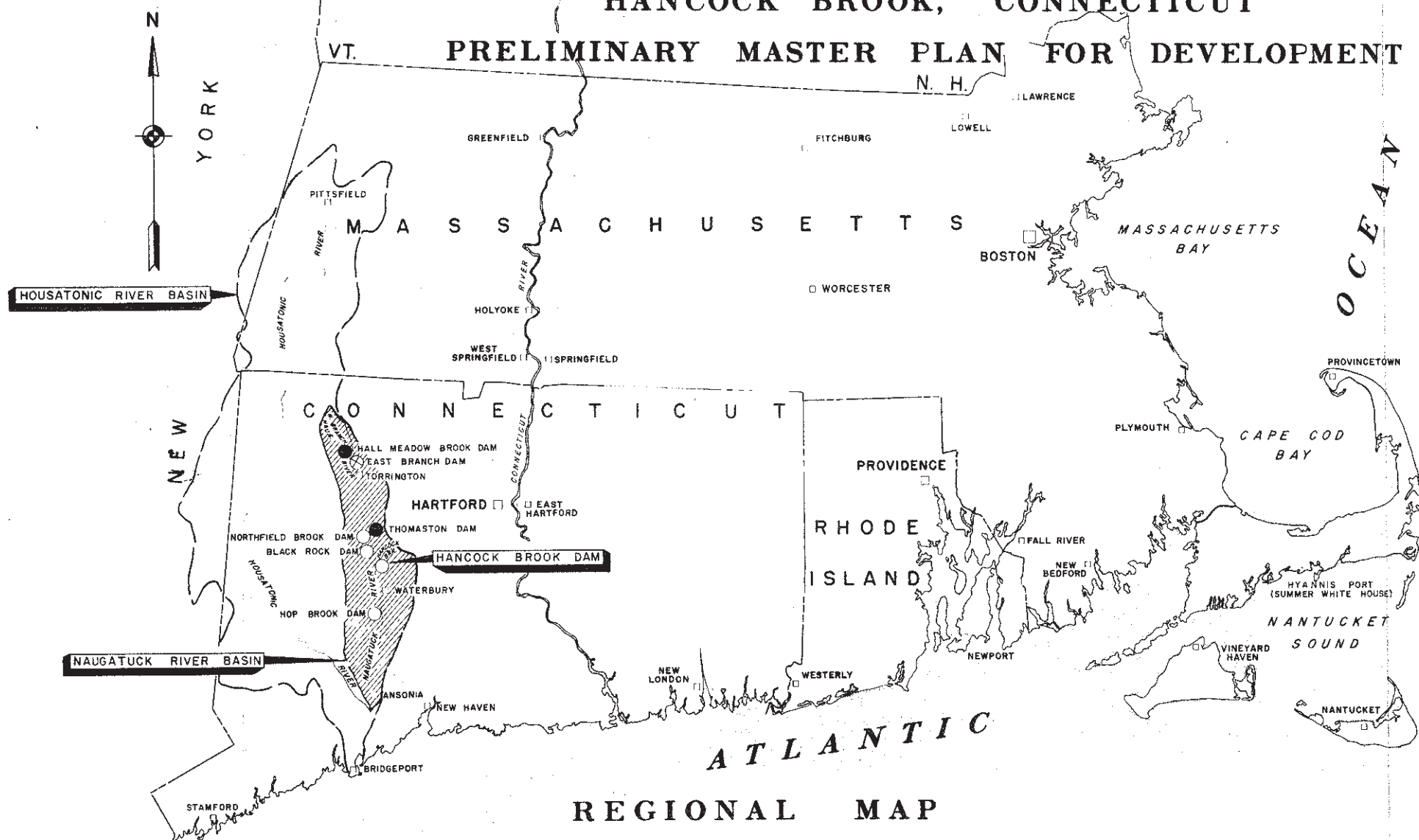
RESERVOIR PLAN

SCALE IN FEET
500 0 500 1000

REVISION	DATE	DESCRIPTION	BY

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.			
DR. BY M.W.B.	TR. BY	CK. BY	HOUSATONIC RIVER FLOOD CONTROL NAUGATUCK RIVER BASIN HANCOCK BROOK RESERVOIR PRELIMINARY MASTER PLAN GENERAL DEVELOPMENT PLAN HANCOCK BROOK CONNECTICUT
SUBMITTED			
CHIEF RES. DEV. SECTION			
APPROVAL	APPROVED	DATE	MAY 1962
CHIEF P. & R. BRANCH	CHIEF ENGINEERING DIV.		
SCALE AS SHOWN SPEC. NO. CIV. ENG. - 9-016			DRAWING NUMBER
SHEET			

HOUSATONIC RIVER FLOOD CONTROL NAUGATUCK RIVER BASIN HANCOCK BROOK RESERVOIR HANCOCK BROOK, CONNECTICUT PRELIMINARY MASTER PLAN FOR DEVELOPMENT

**LEGEND**

RESERVOIRS COMPLETED ●
RESERVOIRS UNDER CONSTRUCTION ⊗
RESERVOIRS AUTHORIZED ○

INDEX TO DRAWINGS		
DRAWING NO.	SHEET NO.	TITLE
1		REGIONAL MAP & INDEX
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3		GENERAL DEVELOPMENT PLAN

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